SOVIET JOURNAL OF AUTOMATION AND INFORMATION SCIENCES

CONTENTS FOR 1990

Number 1

	English Page	Russian Page
PROBLEMS OF CONTROL SYSTEM DYNAMICS		
V.M. KUNTSEVICH: Synthesis of Control Systems Under Conditions of Uncertainty (Robustness of Closed Control Systems)	1	3
Yu.I. SAMOYLENKO: Dynamics of the Evolution of a System of Linear Oscillators Under Parametric Resonance Control	8	9
INFORMATION-PROCESSING METHODS		
A.G. IVAKHNENKO, I. K. TIMCHENKO and D. A. IVAKHNENKO: Nonparametric Forecasting Models. Part 4. Combining Forecasts of Multidimensional Processes	19	21
A.P. SARYCHEV: A Discriminant Analysis Scheme with Training and Verification Observation Subsamples	31	32
M.M. LYCHAK: An Iterative Algorithm for Solving the Linear Programming Problem	41	42
IDENTIFICATION AND ADAPTIVE CONTROL METHODS		
M.V. BONDARENKO: Investigation of Algorithms for the Identification of Nonstationary Objects	53	55
OPTIMAL CONTROL		
A.I. MOROZ: Constructive Synthesis of Time-Optimal Control Laws	66	66
A.V. USHAKOV: Modal Control in a Linear Functional Regulation Problem for a Multidimensional Object	70	69
BRIEF COMMUNICATIONS		
P.I. BALK and A.S. BEREZOVSKIY: An Algorithm for Piecewise-Linear Approximation of Experimental Dependencies When the Measurement Error has Nonzero Mathematical Expectation	76	83
S.F. KOZUBOVSKIY and V.V. KUPRIYANOV: Identifying Complex Systems When Controlling Technological Processes	81	87
V.M. MIKHAYLENKO and O.P. KRAVCHUK: Synthesis of a Multidimensional Network Structure Under Conditions of Optimal Flow Control	85	90

	English Page	Russian Page

Number 2

MATHEMATICAL MODELING

A.P. ANDRUSHCHENKO and O.A. KHOROZOV: Properties of Functional Mappings Implemented by Biochemical Reactions	1	76

METHODS OF DATA PROCESSING

Yu.P. YURACHKOVSKIY: Analytical Construction of a Least-Variance Discriminating Criterion	7	3
V.I. VASIL'YEV, F.P. OVSYANNIKOVA, V.I. SUSHKO and D.Ye. SKVALETSKIY: Synthesis of Continuous Spaces That Guarantee the Separation of Patterns with a Specificed Reliability	15	10

OPTIMAL CONTROL

V.B. LARIN: Parametrization of the Set of Stabilizing Regulators in a Standard Synthesis Problem	21	17
Ye.I. VEREMEY: Numerical Methods of Mean-Square Synthesis with Modal Constraints	27	22
A.I. PETROV and G.O. STETSKO: The Separation Principle in Optimal Control of Systems with Randomly-Changing Structure	32	27

CONTROL SYSTEM DYNAMICS

P.F. OSMOLOVSKIY and A.A. KHUDYAYEV: The Effect of Input Coordinates Delay on the Dynamic Precision of a Two-Channel Iterational Measurement System	40	35
I.B. YUNGER and O.I. GERASIMOV: Algebraic Criteria for Absolute Stability	48	42

CONTROL AND OPTIMIZATION OF DISTRIBUTED-PARAMETER SYSTEMS

A.V. FOMENKO: Controlling the Damping of Waves that Propagate in Nonhomogeneous Media	51	46
V.Ya. DANILOV and Yu.K. PODLIPENKO: Application of the Integral Equations Method to the Problem of Calculating the Field in a Plane-Parallel Waveguide from the Results of Measuring the Acoustic Pressure in the Near Field of Radiator	55	50

CONTROL AND ESTIMATION METHODS UNDER CONDITIONS OF INDETERMINANCY

N.N. SAL'NIKOV: Boundedness of the Ensemble of Trajectories of a Linear Discrete System in the Presence of Parametric Indeterminancy	62	56

	English Page	Russian Page
CONTROL IN ENGINEERING SYSTEMS		
L.V. ZUDIKHIN and A.G. CHENTSOV: On a Problem of Limited-Resourses Sequential Control. Part 1	69	63
V.I. GOSTEV and V.I. POLIVANOV: Parametric Synthesis of Digital Regulators in Discrete-Continuous Systems by the Numerical Method of Unconditional Optimization	75	68
T.Z. ARALBAYEV, G.G. ARALBAYEVA and V.N. NIKULIN: On Monitoring the State of the Anode Contact Surface According to the Voltage Spectrum of an Aluminum Electrolyzer	81	74
V.A. BOYARINOV, V.I. KISELEV and N.A. LUMPOV: An Approach to Error Compensation in Numerical Methods That is Based on GMDH Algorithms	84	76
V.S. VORONKOV: Synthesis of Systems for the Control of Weakly-Damped Objects	89	80
A.Z. MELIKOV and L.A. PONOMARENKO: A Numerical Method of Optimizing Multiflow Queueing Systems	96	85
V.V. PAVLOV and V.V. PAVLOVA: Transversality Conditions for a Differential Game Duel	100	89
I.D. PONOMAREVA and G.V. TSEPKOV: Reconstruction of a Random Signal Which is Specific by Extremal Values	102	91

Number 3

Ya.Z. TSYPKIN: Frequency Criteria of Linear Discrete System Modality	1	3
O.Yu. EMANUILOV: Exact Controllability of Hyperbolic Equations. Part 1	8	10
M.Z. ZGUROVSKIY and W. FRED RAMIREZ: Estimating the States and Parameters of Stochastic Distributed Processes That Develop in Different Temporal Domains	12	14
V.P. BELOGUROV: A Criterion of Model Suitability for Forecasting Quantitative Processes	21	23
IDENTIFICATION AND ADAPTIVE CONTROL METHODS		
G.M. BAKAN and N.N. KUSSUL': Set-Theoretical Identification of Linear Objects in the Fuzzy Ellipsoidal Set Class	26	29
A.I. SAVENKO and V.P. YAKOVLEV: Decomposition of the Problem of Identifying Mechanical Systems from the Their Frequency Characteristics by the Modal Method	38	41
L.V. YATSENKO: Construction and Analysis of a Family of Ellipsoidal Estimation Algorithms	46	48
OPTIMAL CONTROL		
A.I. YEGOROV and T.F. MIKHALOVA: Synthesizing an Optimal Control for a Bounded-Control Thermal Process. Part 1	54	57

	English Page	Russian Page
QUALITATIVE METHODS IN CONTROLLED SYSTEMS		
A.P. KOTS and N.N. PANCHENKO: Representing a Control by Partitionable Transformations	59	62
N.F. KIRICHENKO and Yu.P. STETS'KO: On the Problem of Stabilizing the Motion of Linear Systems	63	65
CONCISE INFORMATION		
A.Yu. GARNAYEV and L.G. SEDYKH: A Search Game of the Searcher-Searcher Type	70	72
ZU GVAN KHVI: Sufficient Conditions for Avoidance in Differential-Difference Games	74	75
S.F. KOZUBOVSKIY and V.V. KUPRIYANOV: Use of Rank Correlation Principles Monitoring the Engineering Parameters of Ecological Processes	80	80
M.T. PAGUTA and G.A. CHECHKO: Modeling of a Chemical Etching Process in Thin Films	83	82
Yu.A. ZAK: Probabilistic Dynamic Models of the Operation of Assembly Processes	86	84

Number 4

PROBLEMS OF CONTROL SYSTEM DYNAMICS		
Ya.Z. TSYPKIN and B.T. POLYAK: Frequency Criteria of Robust Modality in Linear Discrete Systems	1	3
O.Yu. EMANUILOV: Exact Controllability by Hyperbolic Equations. Part 1. Applying Theorems on the Distribution of Singularities to Controllability Problems	8	9
V.V. NOVITSKIY: Constructing a Feedback Path and a Lyapunov Function for Linear Nonstationary Systems	15	16
B.A. RYAKOV and G.P. SACHKOV: Estimating the Value of ε-Invariant Systems	23	23
A.I. YEGOROV and T.F. MIKHAYLOVA: Synthesizing an Optimal Control for a Bounded-Control Thermal Process. Part 2	31	31
F.A. ALIYEV, B.A. BORDYUG and V.B. LARIN: The Discrete Generalized Riccati Equation and the Factorization of Matrix Polynomials	40	39
Z.M. GASANOV: Approximate Synthesis of an Optimal Control for Distributed-Parameter Systems with Incomplete and Inaccurate Measurements	48	46
V.I. VASIL'YEV, Yu.I. GORELOV, V.I. SUSHKO and V.V. IGOLKIN: Synthesizing Linear Dependency Spaces	53	51
A.P. ANDRUSHCHENKO and Yu.I. SAMOYLENKO: Using a Model Representation of Biochemical Reactions for Recognizing Matrix Patters	58	56
V.I. MAKSIMOV: Stable Restoration of Inputs from Measurements Results	62	60
K.Ya. KUKHTA: On a Method for Solving a Nonlinear Continusously-Discrete Boundary Problem in Control Theory	68	66

	English Page	Russian Page
BRIEF INFORMATION		
G.M. BAKAN and N.N. KUSSUL': A Necessary Condition for the Convergence of an Identification Algorithm Based on Families of Ellipsoidal Estimates	75	72
L.A. GNATIV, A.D. KOZHUKHOVSKIY and A.I. LITVIN: Fast-Transform Algorithms for Reed-Muller and Hamming Codes	79	74
Yu.V. KULIK and V.M. MIKHAYLENKO: Control Goals and Criteria in Developing Pipeline Systems	83	77
D.V. LEBEDEV: Controlling the Spherical Motion of a Rotating Rigid Body with Incomplete Information about its Parameters	86	80
I.F. RADCHENKO: A Dynamic Model of a Heat-Exchange Apparatus	93	86
Yu.N. CHEKHOVOY: An Approach to the Problem of Simulational Modeling and Control of Fuel Flame Combustion	97	89

Number 5

CONTROL AND PHYSICAL SYSTEMS		
SAMOYLENKO, Yu.I.: Control of Multi-Stable Chemical Equilibrium Structures	1	3
YATSENKO, V.A.: Syntactic Pattern Recognition in the Class of Finite Quantum Automata	8	10
DATA-PROCESSING METHODS		
IVAKHNENKO, A.G., V.A. CHAINSKAYA and N.A. IVAKHNENKO: A Non-Parametric Combinatorial GMDH Algorithm for Analogue Search Operators	11	14
SARYCHEV, A.P.: An Averaged Regularity Criterion for the Group Method of Data Handling in the Problem of Searching for the Best Regression	24	28
YANSHIN, V.V.: Isolating Suspicious Regions in a Binary Image by the Symptom of Lumps	30	33
OPTIMAL CONTROL		
LARIN, V.B.: The Wiener-Kolmogorov Method in Problems of Synthesizing Multidimensional Control Systems	36	39
METHODS OF CONTROL AND ESTIMATION UNDER INDETERMINACY CONDITIONS		
PAK, V.Ye. and A.G. CHENTSOV: A Control Problem with Incomplete Information	42	44
ROBOTS AND ARTIFICIAL INTELLIGENCE SYSTEMS		
GOL'TSEV, A.D.: Image Brightness Segmentation by Means of a Neural-Like Network	47	49

	English Page	Russian Page
KUSSUL', E.M. and T.N. BAYDYK: Design of a Neural-Like Network Architecture for Recognition of Object Shapes in Images	53	56
MATHEMATICAL MODELLING AND ANALYSIS OF COMPLEX CONTROL SYSTEMS		
ZASLAVSKIY, V.A. and V.M. SHALAMANOV: Structural Optimization of Local-Area Computer Networks for Distributed Information Systems	59	62
QUALITATIVE METHODS OF CONTROLLED SYSTEMS		
BELIKOV, S.A.: Control of a Transport Process in Periodically Nonhomogeneous Media	66	70
BRIEF COMMUNICATIONS		
AKSENOVA, T.I.: Asymptotic Properties of Criteria for the Choice of Models of Regression of One Random Process on Another	75	78
KULIK, Yu.V. and V.M. MIKHAYLENKO: The Issue of Controlling Pipeline Systems in Which the Flow Distribution Has a Stochastic Model	79	81
KARPINSKIY, F.G. and B.B. TIMOFEYEV: A Training Algorithm in Problems of Mechanical Object Control	81	83
KOCHERGA, Yu.L. and A.A. KAVALETS: Solving a Problem of Minimax Estimation of Linear Regression Parameters in a Nonstochastic Posing	88	88
PEREGUDOV, A.I.: Developing Nonlinear Programming Methods Based on Predicting Parameter Changes in the Minimized Function	93	92

Number 6

PROBLEMS OF CONTROLLED SYSTEM DYNAMICS		
KUNTSEVICH, A.V. and V.M. KUNTSEVICH: The "Robust Stability" Tool System for the Analysis of the Robust Stability of Dynamic Systems	1	3
LEVKOV, S.P.: The Solvability of the Problem of Synthesizing a Regulator in a Closed Linear System	7	9
IDENTIFICATION AND ADAPTIVE CONTROL METHODS		
ANDRUSHCHENKO, A.P., O.S. BURDO and Yu.I. SAMOYLENKO: Identification of a Control Object by Amplitude-Frequency Modulation	12	14
MAKSIMOV, V.I.: Stable Restoration of Controls from Measurements Results. Part 2	17	19
MATHEMATICAL MODELING AND THE INVESTIGATION OF COMPLEX CONTROLLED SYSTEMS		
LARIN, V.B.: A Procedure for Refining the Matrix Signum Function	23	25
KONONENKO, I.V.: Study of an Algorithm for Selecting the Structure of Forecasting Models Which Uses the H-Criterion	26	28

	English Page	Russian Page
CONTROL IN ENGINEERING SYSTEMS		
BOYCHUK, L.M. and Yu.P. YURACHKOVSKIY: Static Stability and Homeostatism of Coordinating Automatic Control Systems	33	35
OSTAPENKO, V.V. and G.S. FININ: A Minimax Approach to the Design of Irrigation Systems	44	45
SYAMPTOMOV, A.I. and O.A. KHOROZOV: Parameterization of the S-Characteristic of Nonlinear Electron Tunneling	50	52
AZARENKOV, S.V.: On Solving the Problem of Controlling a Stationary Acoustic Field by an Iteractive Gradient Algorithm	56	58
AVDONIN, S.A., S.A. IVANOV and I. YO: Start and Point Control of the Vibrations of a Rectangular Membrane	66	68
CONTROL AND ESTIMATION METHODS UNDER INDETERMINACY CONDITIONS		
LYCHAK, M.M.: Solution of the Problem of Structural Parametric Identification (Discrete Approximation) under Indeterminacy Conditions	70	72
QUALITATIVE METHODS OF CONTROLLED SYSTEMS		
KUKHTA, K.Ya.: The Solution of a Nonlinear Nonstationary Continuous-Discrete Boundary Problem in Control Theory	75	78
BRIEF NOTES		
GOSTEV, V.I. and E.M. PLISKO: A Table of the Coefficients of Digital State Observers	81	84